

# PATENT ABSTRACTS OF JAPAN

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B41J 29/38

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G06K 19/00

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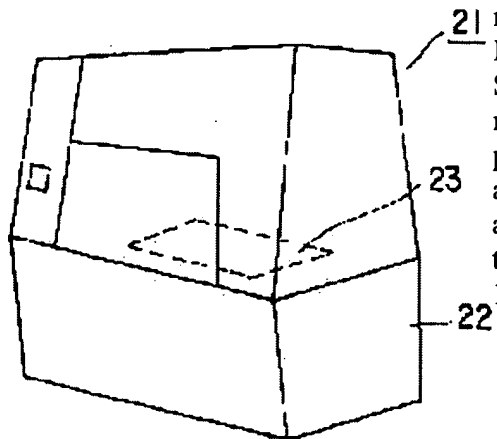
(71)Applicant : **TOSHIBA TEC CORP**

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(72)Inventor : **SUGIYAMA MAKOTO**

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**(54) PRINTER WITH RF-ID READ/WRITE APPARATUS**



(57)Abstract:

PROBLEM TO BE SOLVED: To provide a printer with an RF-ID read/write apparatus which has the RF-ID read/write apparatus incorporated therein and can detect RF-ID write errors.

SOLUTION: An RF-ID read/write apparatus 23 for reading/writing to an RF-ID tag set to a paper, and a printer apparatus 22 for printing to a label of the paper are incorporated in the printer with the RF-ID read/write apparatus. In this case, the printer apparatus 22 prints to the label 12 based on data read out from the RF-ID tag 13 read by the RF-ID read/write apparatus 23.

## LEGAL STATUS

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[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to RF-ID reading / printer with write-in equipment having RF-ID reading / write-in equipment which can read or write in data by non-contact.

[0002]

[Description of the Prior Art] Generally, the tag currently called RF(radio frequency)-ID can be written, even if the tag is hidden, since data can be written by non-contact by using a Hertzian wave.

[0003] Therefore, RF-ID attracts attention as technique which changes to a bar code.

[0004] However, although it is being able to say generally, if all are changed to RF-ID, a present bar code will become unable to read a system.

[0005] Then, the need of performing printing of a bar code and the writing of RF-ID to one tag occurs.

[0006]

[Problem(s) to be Solved by the Invention] Thus, when printing of a bar code and the writing of RF-ID are made to be performed to one tag, the content written in the printed bar code and RF-ID may cause mismatching.

[0007] Although the printed bar code can be judged by the visual sense, since the content written in RF-ID is electric, it is because the content cannot judge visually.

[0008] this invention was made in view of the above-mentioned point, the purpose builds in RF-ID reading / write-in equipment in a printer, and it is in offering RF-ID reading / printer with write-in equipment which can moreover perform a \*\*\*\* detection of the writing of RF-ID.

[0009]

[Problem(s) to be Solved by the Invention] RF-ID reading / printer with write-in equipment according to claim 1 In RF-ID reading / printer with write-in equipment having the printer equipment which prints on the label of RF-ID reading / write-in equipment which performs reading/writing to the RF-ID tag prepared in the form, and the above-mentioned form It is characterized by the above-mentioned printer equipment printing on the above-mentioned label based on the data read in the RF-ID tag read with above-mentioned RF-ID reading / write-in equipment.

[0010] RF-ID reading / printer with write-in equipment according to claim 2 In RF-ID reading / printer with write-in equipment having the printer equipment which prints on the label of RF-ID reading / write-in equipment which performs reading/writing to the RF-ID tag prepared in the form, and the above-mentioned form When write-in processing goes wrong to the RF-ID tag by above-mentioned RF-ID reading / write-in equipment, the above-mentioned printer equipment is characterized by printing a special pattern on the above-mentioned label.

[0011] RF-ID reading / printer with write-in equipment according to claim 3 are characterized by a special pattern according to claim 2 being blank.

[0012] RF-ID reading / printer with write-in equipment according to claim 4 In RF-ID reading / printer with write-in equipment having the printer equipment which prints on the label of RF-ID reading / write-in equipment which performs reading/writing to the RF-ID tag prepared in the form, and the above-mentioned form It is characterized by providing the alarm means which operates when write-in processing to the RF-ID tag by above-mentioned RF-ID reading / write-in equipment goes wrong.

[0013] RF-ID reading / printer with write-in equipment according to claim 5 In RF-ID reading / printer with write-in equipment having the printer equipment which prints on the label of RF-ID reading / write-in equipment which performs reading/writing to the RF-ID tag prepared in the form, and the above-mentioned form While conveyance of the form equipped with the above-mentioned RF-ID tag by conveyance means to convey the form equipped with the RF-ID tag, and the above-mentioned conveyance means is stopped, it is characterized by above-mentioned RF-ID reading / write-in equipment performing reading / write-in processing to the above-mentioned RF-ID tag.

[0014] RF-ID reading / printer with write-in equipment according to claim 6 In RF-ID reading / printer with write-in equipment having the printer equipment which prints on the label of RF-ID reading / write-in equipment which performs reading/writing to the RF-ID tag prepared in the form, and the above-mentioned form It is characterized by conveyance means to convey the form equipped with the above-mentioned RF-ID tag, and above-mentioned RF-ID reading / write-in equipment performing reading/writing of data to the midst which is printing on the label of the above-mentioned form with the above-mentioned printer equipment at the above-mentioned RF-ID tag.

[0015] RF-ID reading / printer with write-in equipment according to claim 7 In RF-ID reading / printer with write-in equipment having the printer equipment which prints on the label of RF-ID reading / write-in equipment which performs reading/writing to the RF-ID tag prepared in the form, and the above-mentioned form In the status that conveyed the above-mentioned form to the RF-ID tag position by conveyance means to convey the form equipped with the above-mentioned RF-ID tag, and the above-mentioned conveyance means, and it was made to stop After above-mentioned RF-ID reading / write-in equipment's writing data in the above-mentioned RF-ID tag and carrying out back feed of the above-mentioned form by the above-mentioned conveyance means, it is characterized by the above-mentioned printer equipment printing on the label of the above-mentioned form.

[0016] RF-ID reading / printer with write-in equipment according to claim 8 In RF-ID reading / printer with write-in equipment having the printer equipment which prints on the label of RF-ID reading / write-in equipment which performs reading/writing to the RF-ID tag prepared in the form, and the above-mentioned form A form is conveyed by the above-mentioned conveyance means at the time of printing to a conveyance means to convey the form equipped with the above-mentioned RF-ID tag, and the above-mentioned label by the above-mentioned printer

equipment. After stopping the above-mentioned form in an RF-ID tag position, it is characterized by printing by above-mentioned RF-ID reading / write-in equipment's writing data in an RF-ID tag, and continuing the above-mentioned printer equipment on the above-mentioned label after that.

[0017]

[Embodiments of the Invention] With reference to a drawing, RF-ID reading / printer with write-in equipment concerning the gestalt of operation of the 1st of this invention are explained below.

[0018] First, the configuration of an RF-ID tag is explained with reference to drawing 1 . In drawing 1 , 11 is pasteboard. The label 12 is stuck on this pasteboard 11. On this label 12, a bar code etc. is printed by printer equipment.

[0019] And RF-ID tag 13 is inserted between pasteboard 11 and the label 12.

[0020] This RF-ID tag 13 is equipped with the memory chip 15 connected to an antenna coil 14 and this antenna coil 14.

[0021] Next, with reference to drawing 2 , RF-ID reading / printer with write-in equipment is explained. In drawing 2 , 21 is a printer case. The printer equipment 22, and RF-ID reading / write-in equipment 23 are built in this printer case 21 both.

[0022] Next, with reference to drawing 3 , RF-ID reading / printer with write-in equipment is explained. In drawing 3 , 31 is CPU (central processing unit) which generalizes and controls this equipment.

[0023] ROM (read only memory)32, RAM (random access memory)33, the input section 34, the print-head control section 35, the display 36, the conveyance means 37, and the interface 38 are connected to system bus 31a from this CPU31.

[0024] The print head 39 is connected to the print-head control section 35, and RF-ID reading / write-in equipment 23 is connected to I/F38.

[0025] In addition, 40 is a buzzer.

[0026] Next, an operation of the gestalt of operation of the 1st of this invention constituted as mentioned above is explained. First, as shown in the flowchart of drawing 4 from the input section 34, a bar-code format is specified. Next, a legible character format is specified. Here, a legible character format is specification of a font type, a size, a position, etc.

[0027] And an RF-ID format is specified. Here, with an RF-ID format, specification of the class of RF-ID etc. is performed if needed.

[0028] Thus, if one command is operated from the input section 34, specification of a bar-code format, specification of a legible character format, and specification of an RF-ID format can be performed. Thus, since three formats can be set up with one command, the data of a bar code, a legible character, and RF-ID can be set up.

[0029] By the way, there is three kinds of physical relationship of a print head 39, and RF-ID reading / write-in equipment 23, as shown in the drawing 6 or the drawing 8 .

[0030] First, as 1st physical relationship, as shown in drawing 6 , it is in the case that the distance of a print head 39, and RF-ID reading / write-in equipment 23 is shorter than the distance of the starting position of a label 12, and the starting position of RF-ID tag 13.

[0031] In the physical relationship of this drawing 6 , since the RF-ID tag has not been conveyed to the position of RF-ID reading / write-in equipment 23 while carrying out printing standby, the writing to RF-ID tag 13 is not made.

[0032] Moreover, it is the case where the distance of a print head 39, and RF-ID reading / write-in equipment 23 is mostly in agreement with the distance of the starting position of a label 12, and the starting position of RF-ID tag 13 as 2nd physical relationship as shown in drawing 7 .

[0033] In the physical relationship of this drawing 7 , just before printing a bar code etc. on a label 12 by the print head 39, RF-ID reading / write-in equipment 23 can be written in RF-ID tag 13.

[0034] Moreover, since the conveyance system is stopped in this case, RF-ID reading / write-in equipment 23 can perform the retry to sufficient reading/writing to RF-ID tag 13.

[0035] Moreover, an error can be notified, when write-in processing does not work, as a result of RF-ID reading / write-in equipment 23 performing write-in processing to RF-ID tag 13 in this case.

[0036] Moreover, in the physical relationship of drawing 8 , an antenna position is an example in the case of coping with it, without making it move. In the physical relationship shown in this drawing 8 , after printing a bar code etc. by the print head 39 on a label 12, it is made to write the same information as a bar code etc. in RF-ID tag 13 with RF-ID reading / write-in equipment 23.

[0037] Next, the 1st example of write-in processing to RF-ID tag 13 by RF-ID reading / write-in equipment 23 is explained with reference to the flowchart of drawing 9 .

[0038] Printing to a label 12 is started by the print head 39 (step S11). And after printing to a label 12 is started by the print head 39, pasteboard 11 is conveyed by the conveyance means 37. And it is judged whether it is an RF-ID tag's 13 presence position (step S11). This is performed by outputting the signal which checks presence of a tag 13 from RF-ID reading / write-in equipment 23 to RF-ID tag 13.

[0039] If judged with "YES" by judgment of this step S11, the writing to RF-ID tag 13 will be performed by RF-ID reading / write-in equipment 23 (step S13).

[0040] After performing the writing to this RF-ID tag 13, it is judged whether the writing to RF-ID tag 13 was successful (step S14).

[0041] When judged with "YES" by judgment of this step S14, it is judged whether printing to a label 12 was completed by the print head 39 (step S15).

[0042] When judged with "NO" by judgment of this step S15, it returns to a judgment of step S12 mentioned above.

[0043] On the other hand, when judged with "YES" by judgment of step S15, printing to a label 12 is ended from a print head 39 (step S16).

[0044] By the way, when judged with "NO" by judgment of step S14 (i.e., when the writing to RF-ID tag 13 is not successful), it is judged whether the RF-ID position was completed (step S17).

[0045] Error printing is performed when judged with "YES" by judgment of this step S16 (step S18). This error printing is performed by printing the oblique line on a label 12 from a print head 39, as shown in drawing 5 . Then, printing is ended (step S16).

[0046] Thus, since the oblique line was printed on the label 12 when the writing to RF-ID tag 13 became an error, an operator can know the purport.

[0047] Thus, time can be shortened even when both writing of the data to printing and RF-ID tag 13 to a label 12 is performed since data were written in RF-ID tag 13 from RF-ID reading / write-in equipment 23 while printing on the label 12.

[0048] In addition, you may be made to print nothing on a label 12 as error printing.

[0049] Next, the 2nd example of write-in processing to RF-ID tag 13 by RF-ID reading / write-in equipment 23 is explained with reference to the flowchart of drawing 10 .

[0050] If a printing start command comes (step S21), feed of the pasteboard 11 will be carried out by the conveyance means 37 to an RF-ID tag's 13 presence position (step S22). And write-in processing of the data to RF-ID tag 13 is performed by RF-ID reading / write-in equipment 23

(step S23).

[0051] And it is judged whether the writing to RF-ID tag 13 was successful (step S24).

[0052] When judged with "YES" by judgment of this step S24, reverse feed of the pasteboard 11 is carried out by carrying out the reverse rotation of the conveyance means 37 (step S25).

[0053] And printing to a label 12 is performed by the print head 39 (step S26). Thus, after RF-ID reading / write-in equipment 23 performs write-in processing of data to RF-ID tag 13, it is made to print on a label 12.

[0054] Thus, printing is ended (step S27).

[0055] By the way, error printing is performed when judged with "NO" by judgment of step S24 (step S28). That is, the oblique line is printed by the label 12 as shown in drawing 5.

[0056] Since it was made to carry out reverse feed after carrying out feed of the pasteboard 11 by this printer, before [ the front face of RF-ID tag 13 ] printing, even if RF-ID tag 13 is in which position, the need of moving the position of the antenna of RF-ID reading / write-in equipment 23 can be abolished.

[0057] In addition, when data are beforehand written in RF-ID tag 13, data are read in RF-ID tag 13 with RF-ID reading / write-in equipment 23, and it is processed into the read data, and may be made to print data on a label 12 from a print head 39.

[0058] By doing in this way, the adjustment of the data written in RF-ID tag 13 and the data printed on a label 12 can be taken.

[0059] Next, the 3rd example of write-in processing to RF-ID tag 13 by RF-ID reading / write-in equipment 23 is explained with reference to the flowchart of drawing 11.

[0060] First, printing to a label 12 is started by the print head 39 (step S31). And pasteboard 11 is conveyed by the conveyance means 37. And it is judged whether it is an RF-ID tag's 13 presence position (step S32).

[0061] When judged with "NO" by judgment of this step S32, printing to a label 12 is continued from a print head 39 (step S33).

[0062] And printing to this label 12 is continued until it is judged with "YES" at step S32.

[0063] And when judged with "YES" by judgment of step S32, conveyance of the pasteboard 11 by the conveyance means 37 is stopped, and write-in processing to RF-ID tag 13 is performed by RF-ID reading / write-in equipment 23 (step S34).

[0064] And it is judged whether the writing to RF-ID tag 13 was successful (step S35).

[0065] When judged with "YES" by judgment of this step S35, printing to the label 12 by the print head 39 is continued (step S35). Then, printing to a label 12 is completed.

[0066] On the other hand, error printing is performed when judged with "NO" by judgment of step S35. For example, as shown in drawing 5, it is made to print the oblique line on the front face of a label 12.

[0067] Thus, since printing to a label 12 is started and it was made to perform the writing to RF-ID tag 13 on the way, a fall of a printing speed can be suppressed.

[0068] In addition, although the oblique line was printed on the label 12 when the writing of the data to RF-ID tag 13 became an error, you may sound a buzzer 40 with the above-mentioned gestalt of operation. Furthermore, Light Emitting Diode is prepared and it may be made to blink the Light Emitting Diode.

[0069]

[Effect of the Invention] Since it was made to print with printer equipment based on the data read with RF-ID reading / write-in equipment according to invention according to claim 1, the content written in the RF-ID tag and the content printed by the label with printer equipment can be made

in agreement.

[0070] According to invention the claim 2 or given in four, when the writing to RF-ID \*\*\*\* by RF-ID reading / write-in equipment goes wrong, an operator can recognize.

[0071] According to invention according to claim 5, a retry can be carried out even when the writing goes wrong since data were written in the RF-ID tag with RF-ID reading / write-in equipment while conveyance of an RF-ID tag was stopped.

[0072] According to invention according to claim 6, time can be shortened even when both writing of the data to printing and the RF-ID tag to a label is performed since data were written in the RF-ID tag from RF-ID reading / write-in equipment while printing on the label with printer equipment.

[0073] Since according to invention according to claim 7 it was made to carry out reverse feed after carrying out feed of the pasteboard with printer equipment, before [ the front face of an RF-ID tag ] printing, even if an RF-ID tag is in which position, the need of moving the position of the antenna of RF-ID reading / write-in equipment can be abolished.

[0074] Since according to invention according to claim 8 printing of a label is started with printer equipment and it was made to perform the writing to an RF-ID tag on the way, a fall of a printing speed can be suppressed.

## TECHNICAL FIELD

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[The technical field to which invention belongs] this invention relates to RF-ID reading / printer with write-in equipment having RF-ID reading / write-in equipment which can read or write in data by non-contact.

## PRIOR ART

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[Description of the Prior Art] Generally, the tag currently called RF(radio frequency)-ID can be written, even if the tag is hidden, since data can be written by non-contact by using a Hertzian wave.

[0003] Therefore, RF-ID attracts attention as technique which changes to a bar code.

[0004] However, although it is being able to say generally, if all are changed to RF-ID, a present bar code will become unable to read a system.

[0005] Then, the need of performing printing of a bar code and the writing of RF-ID to one tag occurs.

## EFFECT OF THE INVENTION

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[Effect of the Invention] Since it was made to print with printer equipment based on the data read with RF-ID reading / write-in equipment according to invention according to claim 1, the content written in the RF-ID tag and the content printed by the label with printer equipment can be made

in agreement.

[0070] According to invention the claim 2 or given in four, when the writing to RF-ID \*\*\*\* by RF-ID reading / write-in equipment goes wrong, an operator can recognize.

[0071] According to invention according to claim 5, a retry can be carried out even when the writing goes wrong since data were written in the RF-ID tag with RF-ID reading / write-in equipment while conveyance of an RF-ID tag was stopped.

[0072] According to invention according to claim 6, time can be shortened even when both writing of the data to printing and the RF-ID tag to a label is performed since data were written in the RF-ID tag from RF-ID reading / write-in equipment while printing on the label with printer equipment.

[0073] Since according to invention according to claim 7 it was made to carry out reverse feed after carrying out feed of the pasteboard with printer equipment, before [ the front face of an RF-ID tag ] printing, even if an RF-ID tag is in which position, the need of moving the position of the antenna of RF-ID reading / write-in equipment can be abolished.

[0074] Since according to invention according to claim 8 printing of a label is started with printer equipment and it was made to perform the writing to an RF-ID tag on the way, a fall of a printing speed can be suppressed.

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## TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] Thus, when printing of a bar code and the writing of RF-ID are made to be performed to one tag, the content written in the printed bar code and RF-ID may cause mismatching.

[0007] Although the printed bar code can be judged by the visual sense, since the content written in RF-ID is electric, it is because the content cannot judge visually.

[0008] this invention was made in view of the above-mentioned point, the purpose builds in RF-ID reading / write-in equipment in a printer, and it is in offering RF-ID reading / printer with write-in equipment which can moreover perform a \*\*\*\* detection of the writing of RF-ID.

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## CLAIMS

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[Claim(s)]

[Claim 1] They are RF-ID reading / the printer with write-in equipment characterized by for the above-mentioned printer equipment to print on the above-mentioned label based on the data read in the RF-ID tag read with above-mentioned RF-ID reading / write-in equipment in RF-ID reading / the printer with write-in equipment having the printer equipment which prints on the label of RF-ID reading / the write-in equipment which performs reading/writing to the RF-ID tag prepared in the form, and the above-mentioned form.

[Claim 2] They are RF-ID reading / the printer with write-in equipment carry out that the above-mentioned printer equipment prints a special pattern on the above-mentioned label in RF-ID reading / the printer with write-in equipment having the printer equipment which prints on the label of RF-ID reading / write-in equipment which performs reading/writing to the RF-ID tag

prepared in the form, and the above-mentioned form when write-in processing goes wrong to the RF-ID tag by above-mentioned RF-ID reading / write-in equipment as the characteristic feature.

[Claim 3] A special pattern is RF-ID reading / printer with write-in equipment according to claim 2 characterized by the blank thing.

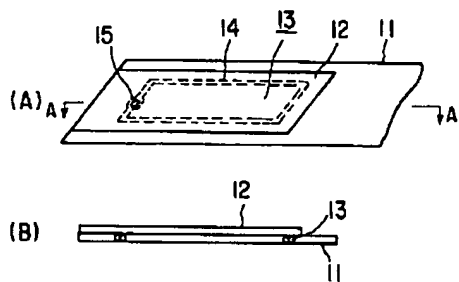
[Claim 4] RF-ID reading / the printer with write-in equipment characterized by to provide the alarm means which operates in RF-ID reading / the printer with write-in equipment having the printer equipment which prints on the label of RF-ID reading / write-in equipment which performs reading/writing to the RF-ID tag prepared in the form, and the above-mentioned form when write-in processing to the RF-ID tag by above-mentioned RF-ID reading / write-in equipment goes wrong

[Claim 5] In RF-ID reading / printer with write-in equipment having the printer equipment which prints on the label of RF-ID reading / write-in equipment which performs reading/writing to the RF-ID tag prepared in the form, and the above-mentioned form While conveyance of the form equipped with the above-mentioned RD-ID tag by conveyance means to convey the form equipped with the RD-ID tag, and the above-mentioned conveyance means is stopped Above-mentioned RF-ID reading / write-in equipment are RF-ID reading / write-in equipment characterized by performing reading / write-in processing to the above-mentioned RD-ID tag.

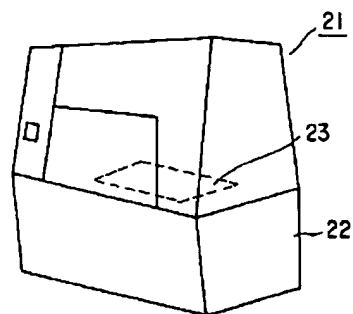
[Claim 6] In RF-ID reading / printer with write-in equipment having the printer equipment which prints on the label of RF-ID reading / write-in equipment which performs reading/writing to the RF-ID tag prepared in the form, and the above-mentioned form To a conveyance means to convey the form equipped with the above-mentioned RF-ID tag, and the midst which is printing on the label of the above-mentioned form with the above-mentioned printer equipment, above-mentioned RF-ID reading / write-in equipment RF-ID reading / write-in equipment characterized by performing reading/writing of data to the above-mentioned RF-ID tag.

[Claim 7] In RF-ID reading / printer with write-in equipment having the printer equipment which prints on the label of RF-ID reading / write-in equipment which performs reading/writing to the RF-ID tag prepared in the form, and the above-mentioned form In the status that conveyed the above-mentioned form to the RF-ID tag position by conveyance means to convey the form equipped with the above-mentioned RF-ID tag, and the above-mentioned conveyance means, and it was made to stop They are RF-ID reading / write-in equipment characterized by the above-mentioned printer equipment printing on the label of the above-mentioned form after above-mentioned RF-ID reading / write-in equipment's writing data in the above-mentioned RF-ID tag and carrying out back feed of the above-mentioned form by the above-mentioned conveyance means.

[Claim 8] In RF-ID reading / printer with write-in equipment having the printer equipment which prints on the label of RF-ID reading / write-in equipment which performs reading/writing to the RF-ID tag prepared in the form, and the above-mentioned form A form is conveyed by the above-mentioned conveyance means at the time of printing to a conveyance means to convey the form equipped with the above-mentioned RF-ID tag, and the above-mentioned label by the above-mentioned printer equipment. They are RF-ID reading / write-in equipment characterized by printing by above-mentioned RF-ID reading / write-in equipment's writing data in an RF-ID tag, and continuing the above-mentioned printer equipment on the above-mentioned label after that after stopping the above-mentioned form in an RF-ID tag position.

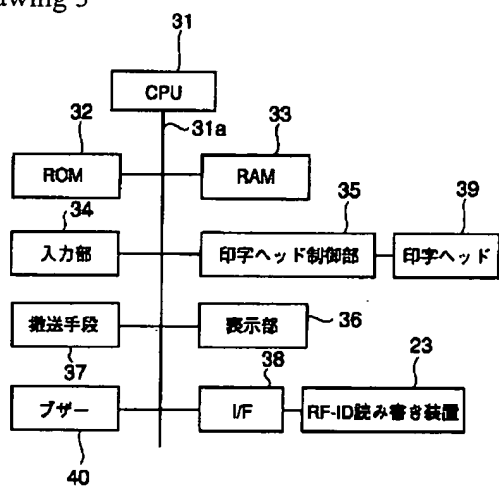


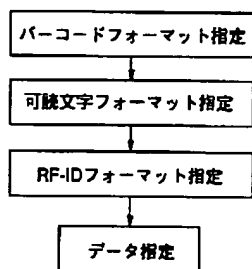
Drawing 1



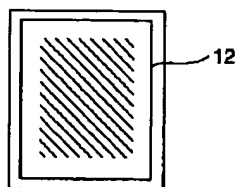
Drawing 2

Drawing 3

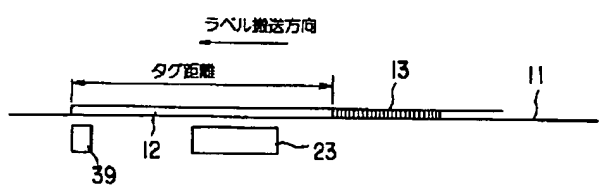




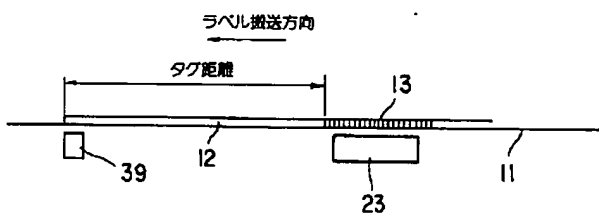
Drawing 4



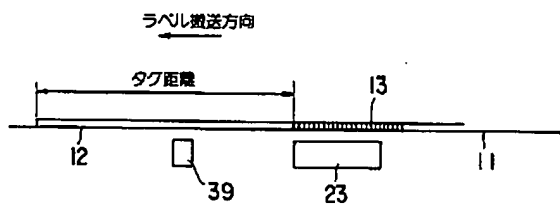
Drawing 5



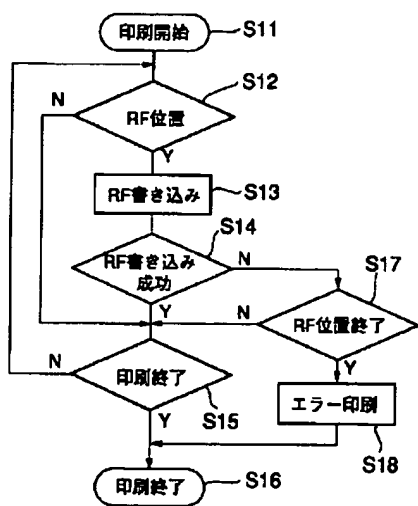
Drawing 6



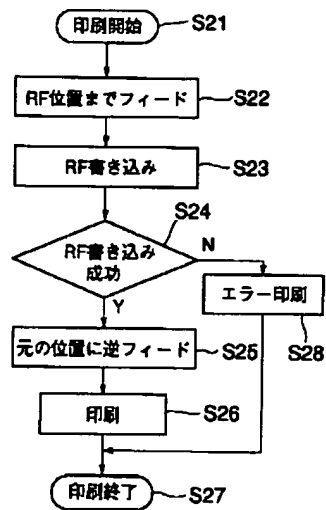
Drawing 7



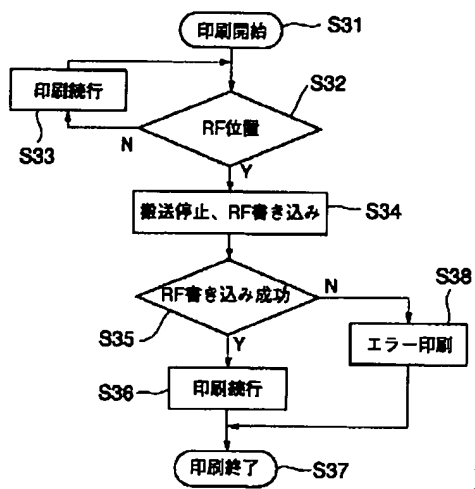
Drawing 8



Drawing 9



Drawing 10



Drawing 11